

# The “*Themis* Group” of *Euphaedra* Hübner, [1819] in Angola. Revision and description of one new species (Lepidoptera: Nymphalidae, Limenitidinae)

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## Abstract

New data are presented relatively to the *Euphaedra* Hübner, [1819], subgenus *Euphaedrana* Hecq, 1976 of the “group *themis*” in Angola. Four species are assigned being one of them described as new with base on specimens from the Cabinda Territory.

KEY WORDS: Lepidoptera, Nymphalidae, Limenitidinae, new species, new data, Angola.

**El “grupo *themis*” de *Euphaedra* Hübner, [1819] en Angola. Revisión y descripción de una nueva especie (Lepidoptera: Nymphalidae, Limenitidinae)**

## Resumen

Se presentan nuevos datos en relación al “grupo *themis*” de *Euphaedra* Hübner, [1819], subgénero *Euphaedrana* Hecq, 1976 en Angola. Se mencionan cuatro especies, una se describe como nueva en base a los ejemplares del Territorio de Cabinda.

PALABRAS CLAVE: Lepidoptera, Nymphalidae, Limenitidinae, especie nueva, nuevos datos, Angola.

**O “grupo *themis*” de *Euphaedra* Hübner, [1819] em Angola. Revisão e descrição de uma nova espécie (Lepidoptera: Nymphalidae, Limenitidinae)**

## Resumo

Novos dados são apresentados relativamente para o “grupo *themis*” de *Euphaedra* Hübner, [1819], subgénero *Euphaedrana* Hecq, 1976 em Angola. São referidas quatro espécies, sendo uma delas descrita como nova com base em exemplares do Território de Cabinda.

PALAVRAS CHAVE: Lepidoptera, Nymphalidae, Limenitidinae, espécie nova, novos dados, Angola.

## Introduction

*Euphaedra* Hübner, [1819] is an exclusively Afrotropical genus known by ca. 200 species, especially diversified in the Central African forests. It is known from eight subgenera (HECQ, 1997, 1999) based in the male genitalia features (aedeagus cornuti and valves apex) subgenus *Euphaedrana* Hecq, 1976 being the most diverse. This subgenus includes five species groups being the “*themis*-

group” characterized by a reddish area at the base of the hindwing verso - a similar area may occur also on the base of the forewing verso and, less frequently, on the wings recto. At the forewing verso there are two medio-cellular black spots, one on the base of costal and subcostal spaces and, often, a third one on the cell basal area; incidentally, the hindwing red spot may be overlaid by black scales and/or the forewing red area may attenuate or disappear. The hindwing verso shows an entire row of submarginal black spots.

The “*themis* group” was considered to integrate half a dozen lineages and was already reported from Angola by *E. eberti* Aurivillius, 1896 and some non-valid or not identified subspecies reported as *E. themis* (Hübner, [1807]). The reference to the former species for the country is confirmed upon one such BACELAR (1956) re-examined specimens; the same happens with one specimen she-was B ♀ or ♂ identified as *E. themis adonina* (Hewitson, 1865), today *E. adonina spectacularis* Hecq, 1997. The nominate subspecies of *E. permixtum* (Butler, 1873) is recorded, and one new species is described.

## Material and methods

All the examined specimens are housed in to the Natural History and Science National Museum in Lisbon (MUHNAC) though they were originally deposited in distinct entomological collections: in the now Centro de Zoologia of the Instituto de Investigação Científica Tropical (CZ), plus in the private collection of Passos de Carvalho (PC) and of the second co-author (BS), this last one integrating specimens caught by A. Figueira (AF). All the samples from Cabinda were obtained by Laura Malheiro da Silva more than six decades ago. If no collector is assigned, the specimens were obtained by the owners of the integrated collections. All the specimens were collected in forest.

The following abbreviations will be also used along the text: CAR: Central African Republic; CDR: Congo Democratic Republic; E: East, eastern; FW: Forewing; HW: Hindwing; N: North, northern; nn: not numbered sample; R: Dorsal surface, recto; V: Ventral surface, verso; W: West, western; WL - FW length measured from apex to the insertion in the thorax.

All the studied specimens were collected in forests close to the following localities (coordinates according to MENDES *et al.*, 2013): CABINDA - Buco Zau (04°46'S, 12°34'E, 50 m); KWANZA NORTE - Cassoalala (09°29'S, 14°22'E, < 50 m); Maria Teresa / Dondo (09°41'S, 14°26'E, ca. 100 m); Nova Oeiras (09°28'S, 14°27'E, ca. 100 m); KWANZA SUL - Roça Rio Bimbe (11°05'S, 14°13'E, 300-400 m); UIGE - Inga (07°18'S, 14°25'E, ca. 600 m).

## Taxonomy

*Euphaedra* (*Euphaedrana*) *eberti* Aurivillius, 1896 (Figs 1, 2)

*Euphaedra eberti* Aurivillius, 1896; *Öfvers. K. VetenskAkad. Förh.*, **53**: 433

TL: Ubangi [Democratic Republic of Congo]

Material examined: CABINDA, Buco Zau, 1 ♀ (CZ-nn), 25-VII-1952.

*E. eberti* (WL: 46 mm for the re-examined specimen) is a variable species which main diagnostic feature concern the reduction of the V reddish basal spot which (almost) lacks on the FW and is reduced and brick on the HW. The FWR post-discal white band is in the specimen examined as less S-shaped than usual and there is no basal spot on this forewings.

BACELAR (1956) identifies as *E. eberti*, 2 ♂♂, 1 ♀ from Buco Zau, as a matter of fact 1 ♂, 2 ♀♀, all revised: one female is *E. eberti* as registered, but the couple (from 18 and 25 May) actually belongs to *E. (E.) mayumbensis*, part of a distinct species-group. After HECQ (1997) and D'ABRERA (2004) *E. eberti* nominate subspecies occurs in N CDR and S CAR only; neither of them took into consideration its BACELAR (1956) reference. A few morphological dissimilarities and the geographical remoteness of the Angolan specimen relatively to the nominate subspecies known range, led us to suspect that the Cabinda population may even correspond to a non-described subspecies. The only other known subspecies, *E. eberti hamus* Berger, 1940, is restricted to the E CDR and Uganda.

*Euphaedra (Euphaedrana) permixtum* (Butler, 1873) (Figs 3-6)

*Romaleosoma permixtum* Butler, 1873; *Cist. Ent.*, 1(7): 158

TL: Gabon

Material examined: KWANZA NORTE, Cassoalala, 1 ♂ AF- NYN64004 (BS-36497), 08-XII-1971; Id, 2 ♂♂ AF-NYM64181-2 (BS-36495-6), 28-XII-1971; Id, 1 ♂ AF-NYM64183 (BS-36498), 02-I-1972. Dalatando, 1 ♀ (PC-nn), 28-XI-1975; Id, 1 ♂, 1 ♀ (PC-nn), 08-I-1975; Id, 1 ♂ (PC-nn), 08-XI-1975; Id, 1 ♂ (PC-nn), 05-XII-1975. Maria Teresa, Dondo, coll. A. Serrano & R. Capela, 1 ♀ (BS-35134), 22-XI-2015. Nova Oeiras, 1 ♀ (BS-32910), 17-VI-1973; Id, 1 ♀ (BS-14633), 08-XII-1973. KWANZA SUL, Roça Rio Bimbe, 1 ♂ (BS-16150), I-1963. UIGE: Inga, 1 ♀ (BS-16121), XI-1964; Id, 1 ♀, (BS-16120), XI-1964.; Id, 1 ♀ (BS-16129), XII-1964.

With the WL ca 35 mm (♂) and 43-47 mm (♀), this primary submontane and coffee-forest species is characteristic: like in the previous *E. eberti* with no R red basal spots exist but the four wings V show however, developed and conspicuous red basal area. The probably close *E. themis* (Hübner, [1806]) known from Sierra Leone and Nigeria to Congo and *E. permixtum diva* Hecq, 1997 reported to occur exclusively in Nigeria, Cameroon and Gabon (HECQ, 1997), both almost certainly not reaching Angola, have quite clear red basal areas in the FWR. Further, the post-discal FWR band is more parallel-sided and often lighter and wider especially in the female, and at least in the male of *E. themis* it is not reduced; indeed, for *E. permixtum diva* there is no agreement: cf. pl. XVII figs 1, 2 of Hecq, 1997, and photos of the types of the last one: holotype male from Nigeria, Calabar, New Ndebiji, November 1958, allotype female from Nigeria, Calabar, Nkpot, June 1958, both in the MRAC (site of the Royal Museum for Central Africa, Tervuren) with figure of page 412 in D'ABRERA (2004). HECQ (1997) is, indeed, quite dubious in what the real validity of *E. permixtum* subspecies is concerned, as he reports relatively to *E. permixtum diva* "... mais on note que sur l'ensemble des spécimens recoltés au Cameroun, tous les passages existe entre le permixtum typique et la sous-espèce décrite ci-après...".

***Euphaedra (Euphaedrana) divoides* Bivar de Sousa & Mendes, sp. n. (Figs 7-10)**

Material examined: Holotype 1 ♀ (CZ-nn), CABINDA, Bucu Zau, 18-V-1952. Paratype, 1 ♂ (CZ-nn), Id, 23-V-1952.

Identification: WL male 41 mm, female 51 mm. FWR with red basal spot well developed, the wing' black discal area occupying all cell, except for the red basal mark. Post-discal band light yellow; in the female it almost attains the costa, becoming narrow in this area; in the male it is ovoid and quite short, reduced to the two most discal spaces. The female FWR green area extends on the anal, cubito-anal and inter-cubital spaces and in the male it is restricted to the two most posterior spaces. V is light-green with numerous large black spots and the wings basal areas are red; the double black spot in the FW cell apex is quite close to the predistal light band and the HW blackish marginal band is narrow being the ante-marginal black spots semi-ovoid.

Etymology: The species is named according to its eventual closeness to *E. permixtum diva* Hecq, 1997.

Biotope: Forest.

Discussion: The re-examined specimens were identified by BACELAR (1956) as *E. themis* (1 ♂) and as *E. themis* ab. *permixtum* (1 ♀ - *E. permixtum* in the handmade label). They seem quite alike the extra-limital *E. permixtum diva* Hecq, 1997, with which it shares the conspicuous red spot at the FWR base but some conspicuous dissimilarities must be enhanced: in the male of *E. divoides* sp. n. the shape and reduction of the light yellowish post-discal band are quite distinct from that of the female and in its female the green scaling extends to the inter-cubital FWR space; further, the position of the FWV cell double black spot well separated from the post-discal light band, as well as the clearly wider HWV blackish marginal band are characteristic of the new species.

DRUCE (1875) and KIRBY (1904-1908) point *E. themis* (unidentified subspecies) from Angola (none locality reported) in what shall correspond to a synonym of *E. divoides* sp. n. Otherwise, *E.*

*themis innocentia* Staudinger, 1886 was considered after ACKERY *et al.* (1995) and WILLIAMS (2007) as an eventual synonym of *E. permixtum diva* Hecq, 1982; it was described from “Angola” and may be, rather, also a synonym of the present taxon.

*Euphaedra (Euphaedrana) adonina spectacularis* Hecq, 1997 (Figs 11-12)

*Euphaedra (Euphaedrana) adonina spectacularis* Hecq, 1997; *Union ent. Belges*: 66

LT: Zaire

Material examined: CABINDA, Buco Zau, 1 ♀, 18-V-1952 (CZ-nn).

The only re-examined specimen (WL: 49 mm) was identified by BACELAR (1956) as *Euphaedra themis* f. *adonina* (Hewitson, 1865) (sex not reported) and corresponds almost exactly to the photo of the CAR ♀ presented by HECQ (1997). The subspecies is the only representative of the “*justitia* subgroup” known to occur in Angola and despite BACELAR (1956) reference it was pointed by HECQ (1997) and by WILLIAMS (2007) as flying from Cameroon to Zaire only. *E. adonina reflecta* Hecq, 1982 described from Nigeria and considered as a valid subspecies by D’ABRERA (2004) though not figured, was previously considered in the synonymy of the nominate subspecies by HECQ (1997); D’ABRERA (2004) doesn’t report, further, *E. adonina spectacularis*.

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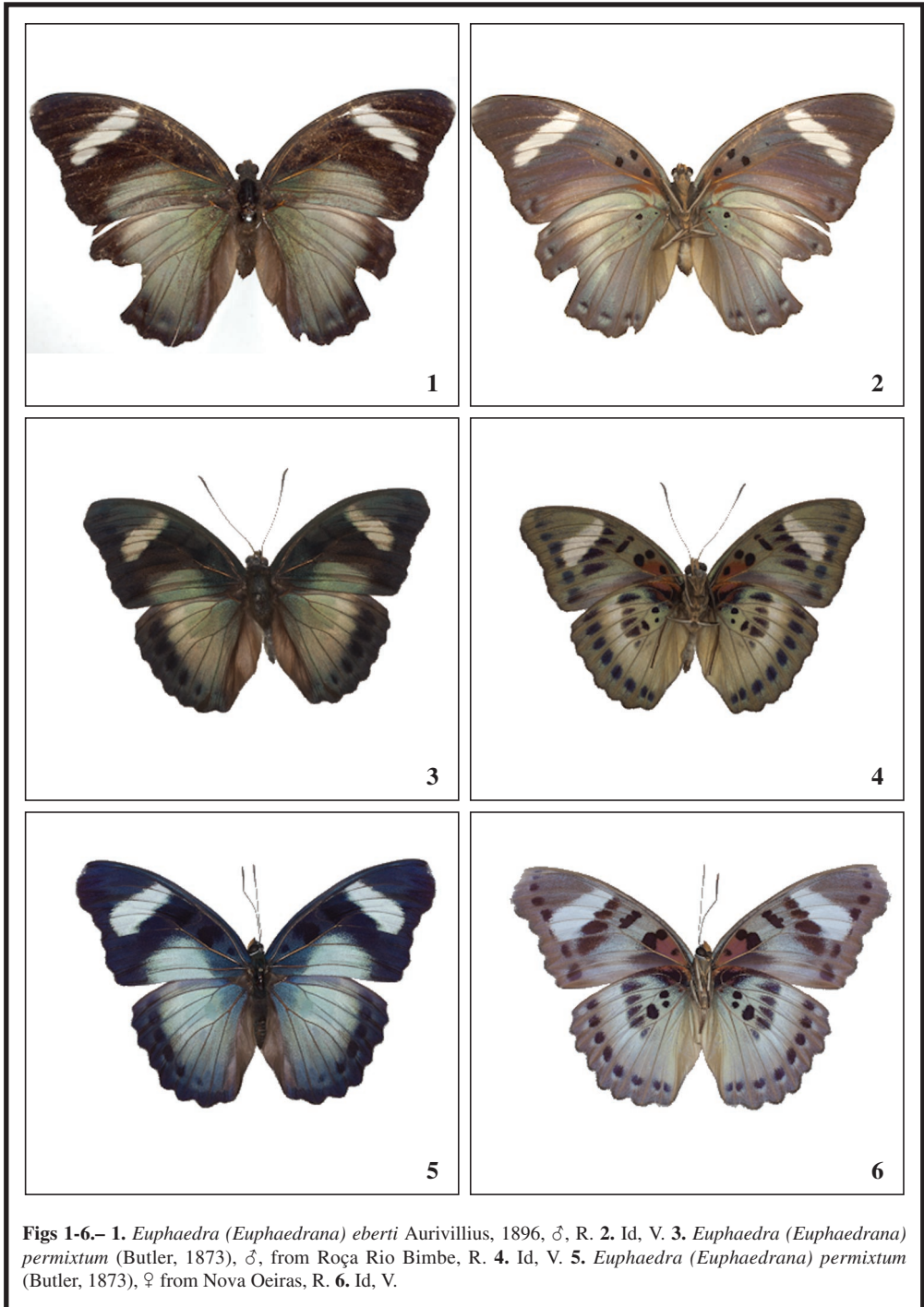
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**Figs 7-12.**— 7. *Euphaedra (Euphaedrana) divoides* Bivar de Sousa & Mendes, sp. n. Holotype ♀, from Buco Zau, Cabinda, R. 8. Id, V. 9. *Euphaedra (Euphaedrana) divoides* Bivar de Sousa & Mendes, sp. n. Paratype ♂, from Buco Zau, Cabinda, R. 10. Id, V. 11. *Euphaedra (Euphaedrana) adonina spectacularis* Hecq, 1997, ♀, from Buco Zau, Cabinda, R. 12. Id, V.